

# HOPE MARINE WATER SYSTEM (PWSNO 1090230) SOURCE WATER ASSESSMENT REPORT

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November 19, 2002



## State of Idaho Department of Environmental Quality

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## SOURCE WATER ASSESSMENT FOR HOPE MARINE WATER SYSTEM

Under the Federal Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. The Department of Environmental Quality is completing the assessments for all Idaho public drinking water systems. The assessment for your drinking water source is based on well construction characteristics; site specific sensitivity factors associated with the aquifer the water is drawn from; a land use inventory inside the well recharge zone; and water quality history. For non-community transient water systems like Hope Marine Water System, recharge zones were generally delineated as a 1000-foot fixed radius around the wells.

This report, *Source Water Assessment for Hope Marine Water System* describes factors used to assess susceptibility to contamination. The analysis relies on information from the well log; an inventory of land use, well site characteristics, potential contaminant sites identified through a Geographic Information System database search; and information from the public water system file. The ground water susceptibility analysis worksheet for Hope Marine Water System is attached.

Taken into account with local knowledge and concerns, this assessment should be used as a planning tool to develop and implement appropriate protection measures for this system. **The results should not be used as an absolute measure of risk and are not intended to undermine the confidence in your water system.**

### Well Construction.

The Hope Marine Water System water system serves a restaurant, store, repair shop and 134 slip marina located on Ellisport Bay near Hope, Idaho. Drinking water is supplied by a flowing artesian well located in front of the store and about 80 feet from the Lake Pend Oreille. The well was drilled in 1997. The 8-inch casing, fitted with a watertight well cap, extends from 16 inches above ground to a depth of 130 feet. The 100-foot deep bentonite surface seal penetrates the confining layer of sand with clay seams found 55 to 96 feet below the surface. Artesian pressures raises the static water level in the well to 2 feet below the surface. The well produced more than 100 gallons per minute when it was tested at the time of drilling. The well is located in a paved parking lot with a paved slope away from the well head. Other physical barriers include a 3 foot diameter cement manhole section with manhole ring top.

### Well Site Characteristics.

Hydrologic sensitivity scores for a well are derived from the soil drainage classification inside the recharge zone boundaries and from information on the well log. Soils in the well recharge zone delineated for the Hope Marine well are generally moderately well drained to well drained. Soils in this drainage classification provide little protection against migration of contaminants toward the well. Well logs in the vicinity show permeable sand and gravel layers lying over a confining layer of fine grained sand, silt and clay that form an aquitard retarding vertical transport of contaminants. The main water producing levels are in coarse sand and gravel layers under the confining layer.

**Potential Contaminant Inventory.**

Land inside the recharge zone delineated for the Hope Marine Water System well is put to commercial, residential and recreational use, including a marina with fuel storage facilities. The on dock fuel tanks have been removed. Petroleum products contain numerous regulated volatile and synthetic organic chemicals. About one third of the 1000-foot buffer zone around the well is covered by the waters of Lake Pend Oreille, a potential source of microbial contaminants. State Highway 200 and a rail line cross the delineation boundaries. Major transportation corridors are potential sources of every class of regulated contaminant.

**Water Quality History.**

Hope Marine Water System has had no water quality problems. All quarterly tests for total coliform bacteria have been negative. The system failed to monitor twice since the new well came on line. Concentrations of nitrates in annual samples submitted for testing range between 0.012 and 0.027 mg/l. The Maximum Contaminant Level for nitrates is 10 mg/l.

**Susceptibility to Contamination.**

An analysis of the Hope Marine Water System well, incorporating information from the public water system file and the potential contaminant inventory, ranked the well at moderate risk relative to all classes of regulated contaminants. Well site geology added the most points to the final susceptibility scores. The ground water susceptibility worksheet for your well is on page 6. Formulas used to compute final scores and rankings are at the bottom of the worksheet.

**Source Water Protection.**

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

Hope Marine Water System has a good water quality history. The system was prompt to drill a new well and undertake other expensive modifications when a sanitary survey in 1997 disclosed serious deficiencies in the old well's construction and location.

Continuing to maintain and operate the system in compliance with *Idaho Rules for Public Drinking Water Systems* is the best drinking water protection for the Marina.

A voluntary measure every system should employ is development of an emergency response plan. There is a simple, fill-in-the-blanks form available on the DEQ website to guide systems through the emergency planning process. Writing and implementing a testing and maintenance schedule might be helpful for ensuring that necessary tasks don't get overlooked during the busy summer season.

Because Hope Marine does not have direct jurisdiction over the entire recharge zone for its well, it will be important to form partnerships with neighboring landowners to regulate land uses that can degrade ground water quality. The goal of source water protection is to maintain current water quality for the future despite the changes we can expect with population growth in North Idaho.

**Assistance.**

Public water suppliers and users may call the following IDEQ offices with questions about this assessment and to request help with drinking water protection planning.

Coeur d'Alene Regional DEQ Office (208) 769-1422

State IDEQ Office (208) 373-0502

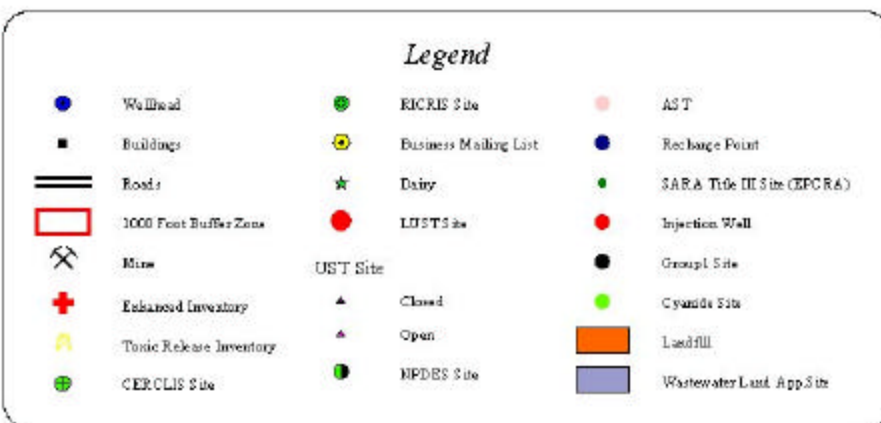
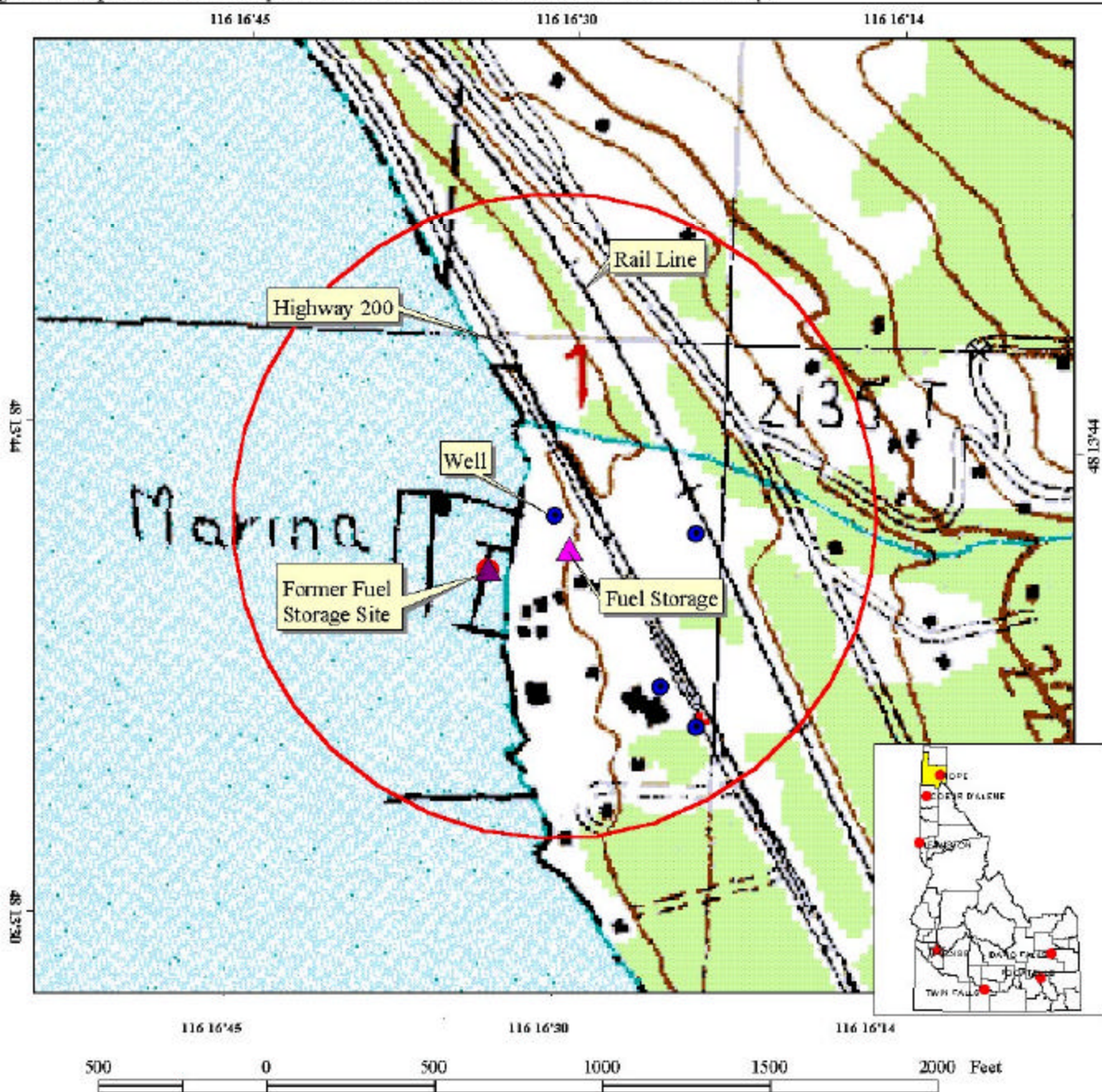
DEQ Website: [www.deq.state.id.us](http://www.deq.state.id.us)

Water suppliers serving fewer than 10,000 persons may contact Melinda Harper of the Idaho Rural Water Association (208) 343-7001 for assistance with drinking water protection strategies.

Idaho Rural Water Association Website: [www.idahoruralwater.com](http://www.idahoruralwater.com)

Home \* A \* Syst Website: [www.uwex.edu/homeasyst](http://www.uwex.edu/homeasyst)

Figure 1. Hope Marine Water System Delineation and Potential Contaminant Inventory.



PWS # 1090230  
Hope Marine  
Water System  
Well

## Ground Water Susceptibility

Public Water System Name : **HOPE MARINE WATER SYSTEM**  
Public Water System Number : **1090230**

Well : **WELL 1**  
10/2/02 10:57:16 AM

1. System Construction		SCORE			
Drill Date	4/25/97				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES	1998			
Well meets IDWR construction standards	YES	0			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	YES	0			
Highest production 100 feet below static water level	NO	1			
Well protected from surface runoff	YES	0			
<b>Total System Construction Score</b>		<b>1</b>			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	Gravel	1			
Depth to first water > 300 feet	NO	1			
Aquitard present	YES	0			
<b>Total Hydrologic Score</b>		<b>4</b>			
3. Potential Contaminant / Land Use		IOC	VOC	SOC	Microbial
		Score	Score	Score	Score
Land Use	URBAN/COMMERCIAL	2	2	2	2
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Sanitary Setback	NO	NO	NO	NO	NO
<b>Potential Contaminant Source/Land Use Score</b>		<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
Potential Contaminant / Land Use - 1000-FOOT BUFFER ZONE					
Contaminant sources present (Number of Sources)	YES. Surface Water, Transportation Corridor, Fuel Storage	1	2	2	2
(Score = # Sources X 2 ) 8 Points Maximum		2	4	4	4
Sources of Class II or III leacheable contaminants or Microbials	YES	1	2	2	
4 Points Maximum		1	2	2	
1000-Foot Buffer Zone contains or intercepts a Group 1 Area	NO	0	0	0	0
Agricultural Land Use	Less Than 25% Agricultural Land	0	0	0	0
<b>Total Potential Contaminant Source / Land Use Score - 1000-Foot Buffer Zone</b>		<b>3</b>	<b>6</b>	<b>6</b>	<b>4</b>
<b>Cumulative Potential Contaminant / Land Use Score</b>		<b>5</b>	<b>8</b>	<b>8</b>	<b>6</b>
<b>4. Final Susceptibility Source Score</b>		<b>6</b>	<b>7</b>	<b>7</b>	<b>7</b>
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

The final scores for the susceptibility analysis were determined using the following formulas:

- 1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.27)
- 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

### Final Susceptibility Ranking:

0 - 5 Low Susceptibility  
6 - 12 Moderate Susceptibility  
> 13 High Susceptibility



## POTENTIAL CONTAMINANT INVENTORY LIST OF ACRONYMS AND DEFINITIONS

**AST (Aboveground Storage Tanks)** – Sites with aboveground storage tanks.

**Business Mailing List** – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

**CERCLIS** – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ? Superfund? is designed to clean up hazardous waste sites that are on the national priority list (NPL).

**Cyanide Site** – DEQ permitted and known historical sites/facilities using cyanide.

**Dairy** – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

**Deep Injection Well** – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

**Enhanced Inventory** – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

**Floodplain** – This is a coverage of the 100year floodplains.

**Group 1 Sites** – These are sites that show elevated levels of contaminants and are not within the priority one areas.

**Inorganic Priority Area** – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

**Landfill** – Areas of open and closed municipal and non-municipal landfills.

**LUST (Leaking Underground Storage Tank)** – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

**Mines and Quarries** – Mines and quarries permitted through the Idaho Department of Lands.)

**Nitrate Priority Area** – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

**NPDES (National Pollutant Discharge Elimination System)** – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

**Organic Priority Areas** – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

**Recharge Point** – This includes active, proposed, and possible recharge sites on the Snake River Plain.

**RICRIS** – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

**SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities)** – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

**Toxic Release Inventory (TRI)** – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

**UST (Underground Storage Tank)** – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

**Wastewater Land Applications Sites** – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

**Wellheads** – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

**NOTE:** Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.